QLUB

News for the QL user

QL software unleashed

Good software for the QL takes a long time to develop but when it has arrived, you soon find it was well worth the wait.

It should be no surprise, then, that one year after the Psion QL Chess became the first leisure software released for the QL, more top-quality games are starting to appear in abundance for the machine. As usual, Psion is heavily involved in supporting this end of the market and has released Match Point, a tennis simulation employing fast action graphics, full player control using joystick or keyboard, and three levels of play.

If you prefer a more traditional zap-'em game, QL Meteor Storm should be in your galaxy. It is an asteroids-style game which offers different levels of play, high-score tables, joystick control, and more frustration than you can possibly handle. A more considered approach is taken with the strategy game QL Reversi which offers a challenging version of the classic Othello board game. You can play against the computer or a non-electronic friend.

Perhaps the most intriguing new game of all is an interactive full-text adventure game. It features independent-minded characters each with their own goals, and uses multiple containers, e.g. keys within wallets within jackets within cubicles. A wide range of English-language commands is accepted by the flexible and forgiving command-language.

Details of this new leisure software, as well as other new software, can be found in a special two-page edition of Software Update included in this issue.
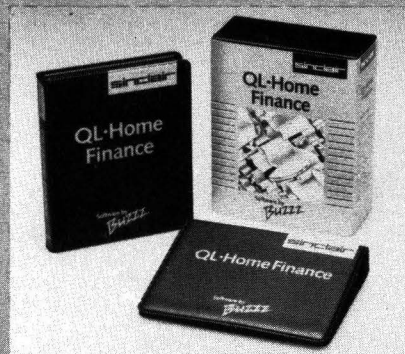
Sinclair pocket televisions offered for prizes in our Spring QLUB competition were won by D S Hay of Aberdeen, M Dumonde, Northwood, Middlesex and R D Waitt, Barnet, Hertfordshire. They qualified by correctly answering that the TV uses only one microchip to control all its operations, that the first primitive colour TV broadcast took place in 1929, and that John Logie Baird pioneered the first 'mechanical' TV system in the U.K.

QL shows off at the shows

The QL has been making its rounds of the major computer shows in recent months and a flock of third-party peripherals and software have followed it around.

The first of the shows was the famous ZX Microfair, which manifested its 16th incarnation at the Royal Horticultural Hall in London in June. On display were a number of 3.5 inch and 5.25 inch disk drive systems, modems, languages and games for the QL.

Probably the biggest draw at the exhibition was the volume of new software for the QL. On show were not only new arcade and adventure-style games but also business programs, utilities and programming languages. The growth of development in the latter category has been truly astounding, with almost every major micro-based programming language now available for the QL, including Pascal, C, Forth, BCPL, LISP and several monitors and assemblers.

The QL is next set to trip the light fantastic at the Personal Computer World Show in early September, an event which may have taken place by the time you read this. If, however, you are sharp-eyed enough to read QLUB News when it is hot off the press, you probably still have a day or two to plan to attend the show at Olympia, London from September 4-8.
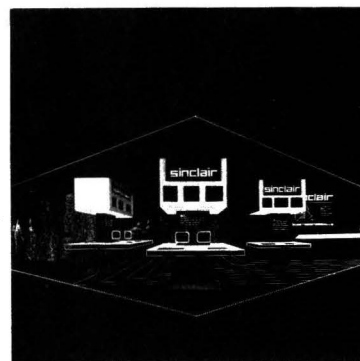
sinclair

Building with the QL

You and your QL are probably well-used to one another by now. It with its two Microdrives, expansion ports, keyboard – and you with your well-calloused keyboard fingers.

You may well feel the need to inject more excitement into your relationship with the machine, perhaps to dress it up a little, make it feel more powerful and give it more responsibility. To do so, you will have to give the QL the tools it will need to undertake that extra responsibility.

Those tools may include a new printer, disk drive system, modem or perhaps simply a monitor. They should be considered as part of some overall plan for your QL system. Given the proper kind of help, the QL could be anything from a dedicated professional wordprocessor to a lawyer's database management system of case precedents. It all depends on how you plan and develop your system.

Unlike any other type of household appliance, no single application can be said to be the QL's primary function. It is what you make of it. If, for example, you are planning to do a great deal of writing and wish to use the QL primarily as a word processor, you might look to buy a correspondence-quality printer and a monochrome monitor.

If, on the other hand, your primary purpose is to develop and maintain a large database, you should probably consider disk drives and a dot-matrix printer. Only you can decide what you need to obtain the most from your QL. If you do so with specific tasks in mind, you are much more likely to be successful.

A list of third-party peripherals for the QL is available by writing to Sinclair Research, Stanhope Road, Camberley, Surrey GU15 3DL. It is not a list of recommended products but merely a collection of names, addresses and specifications provided as a service. Sinclair Research cannot be held responsible for any peripherals purchased from third-party suppliers, nor can the list be said to be comprehensive.

Q LETTERS

QL expansion examined

Recently I bought a QL with a Microvitec Cub colour monitor. When I have come to grips with the QL software, I would like to buy a modem and a printer for it. I have the following questions; can you please give me some advice?
1. Can a modem and a printer be connected at the same time, or will I have to re-cable?
2. Is it possible to buy these items with cables and software included or do I have to become a technician and programmer to make them work?
3. I want a modem with 1200/75 and 300/300 baud and a printer with NLQ, the printer costing no more than £400. Can you recommend any please?

Alex van Tricht
Ashford Hill, Berkshire

Editor's reply: Yes, a modem and printer can be used at the same time, provided that the printer in plugged in through serial port 1 and the modem through serial port 2; or vice versa. Fortunately, most of the companies which have developed modem systems for the QL, including the Tandata Q-CONNECT system, count on you using serial port 1 for a printer and configure their modems to operate through serial port 2.

As for printers, modems and cabling, Sinclair is hoping soon to announce a printer for the QL which will more than meet the requirements you list and would include the appropriate cabling. The Q-CONNECT communications system also includes all the cabling necessary to plug-in-and-go. Although the Q-CONNECT system does not at present include the 300/300 baud specification, Tandata can assist you in obtaining it with its TM512 modem.

News from the bored ROM

While browsing through the QL ROM in a fit of boredom, I discovered a 'WHEN ....END WHEN' construct which is obviously intended for error-handling. When I tried this, however, I got the 'Not Implemented' error message. Does this mean that a new ROM is to be made available? Is there any other way of implementing error-trapping on the QL?

Nigel Freeman,
Coventry Polytechnic.

Editor's reply: It is Sinclair Research policy to look continually for ways to improve and update all products including the QL, but we are not intending to release a new ROM version. Occasionally, new keywords are introduced for production purposes and should not be used in programs unless documented. At present there are no alternative ways of error-trapping.

The QL and its Kiwi fans

U.K. owners of the QL interested in correspondence with New Zealand QL owners can now do so through the New Zealand QL Users' Club. The address is:
NZ QL Users' Club
28 Stokes Road
Epsom, Auckland
New Zealand

Editor's reply: Nobody can say QL owners are not cosmopolitan. We welcome this invitation from Pete Avery in New Zealand but remind readers that QLUB News and QLUB membership are available to U.K. users only – although we appreciate that good news sometimes travels round the world. If you live outside the U.K. and wish to enquire about QL QLUBs in your country, contact your national Sinclair distribution agency or the Sinclair Research U.K. Export Department at 25 Willis Road, Cambridge CB1 2AQ, England for your distributor's address.

HARDWARE UPDATE

You should now be able to buy official Sinclair 3.5 inch disk drives for the QL. As this issue was going to press, an agreement was signed with Micro Peripherals which means that company's disk drives will be offered under the official Sinclair label.

Tandata's Q – CONNECT modem system also expands the increasing number of hardware Options for the QL.

The system offers full integration with the existing QL Qdos operating system and will allow higher-capacity data storage and faster access times than are possible with existing QL Microdrives. Each floppy drive has a formatted capacity of 720K and thus offers about seven times the amount of space on a Microdrive cartridge.

Cloneable and non-copy protected software should be easily transferable to the disk system and both Microdrive emulation and disk drive-specific access commands are included. The small, lightweight drives are designed in QL black and the interface to connect them to the QL plugs into the QL expansion port is at the left-hand side of the machine.

The disk drives are available from many QL stockists or direct from Micro Peripherals at INTEC, Unit 3, Hassocks Wood, Wade Road, Basingstoke, Hampshire, Tel. 0256-473232. Enquiries should also be directed to that address.

The disk drives are not, however, the only peripherals being developed for the QL. At press time, an agreement was also imminent on plans to offer an attractive NLQ printer.

The printer, incidentally, also has another international plug-in-and-go advantage as it can use the QL foreign language character sets to produce documents in a variety of languages, a particularly valuable feature for language students.

The QL is getting support from third-party peripheral manufacturers as well. Storage experts Cumana announced as we were going to press that it expects to offer an OS-9/68000 environment and disk interface for the machine.

While we are not endorsing the product and have not yet had the chance to test it, the specifications are interesting. The hardware includes a double-density floppy disk controller for up to four drives, a Winchester hard disk interface, a RAM expansion unit up to 512K, a ROM expansion unit up to 144K, both parallel and serial printer ports, a mouse interface, a battery-backed calendar and a graphics kernel.

The promised software claims to offer a full implementation of the well-known Unix-like OS-9 operating system, a word processing system with spell-checking and mail merge, a spreadsheet, interactive Basic compiler, both C and Pascal compilers, a screen editor and relocatable macro assembler. Prices and availability have not yet been released and Cumana, NOT Sinclair, should be contacted for details: – Cumana sales office, Unit 7, The Pines Trading Estate, Broad Street, Guildford, Surrey, Tel: 0483-503121.
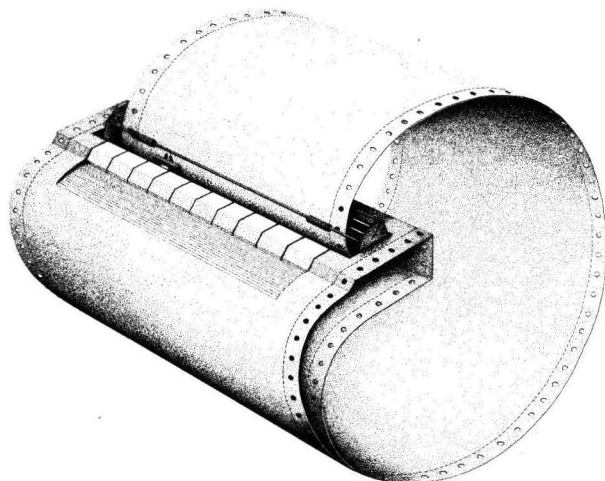
SOFTWARE UPDATE

Get ready to buy more shelves for your software. Ours are already sagging with the weight of new releases in the games, utilities and business software departments. To give you a chance for a detailed examination of the new releases, look at the reviews below.

In this issue, we profile both QL Entrepreneur and QL Meteor Storm. You will also see a list of some of the better entertainment software in a box on the page opposite. We start by looking at the most serious of those two new releases, QL Entrepreneur.

In an age when unemployment is rising and the economy seems buffeted by good or ill winds which blow from across the Atlantic, it is not surprising that many people have turned to entrepreneurial self-employment as the answer to their financial troubles.

The problem, however, is that too many people go into business ventures without doing much, if any, forward planning and find themselves either bankrupt or hopelessly overdrawn before the end of their first year. QL Entrepreneur is directed at eliminating that kind of misfortune.

The authors, Triptych Publishing – profiled on page six of this issue – define the £39.95 program as "a complete learning and applications course designed to help you through the complex process of determining the viability of a new business venture". The program works on two levels, either as a teaching aid for those uninitiated in business practice and/or an analytical business tool.

To obtain the most from the program and have a successful business, you would be well-advised to run through the teaching portion of the program first, as it reviews many basic accounting and book-keeping concepts which are easily muddled if they have fallen into disuse.

The background information is clearly written and helpful. Here is a sample from the second chapter:

"For most people, the ideas for their new venture will come together in bits and pieces. The idea for a product might come one day, its packaging another, and the marketing angle you feel will really get the message across will come on yet another day......"

'The moment yo it instantly l number of s na one of which termina

Once the basic business concepts have been covered, the program explores using numbers to develop a business plan, how to run a balance sheet, when you are really making a profit, the importance of having sufficient cash, how to handle VAT and company tax, and how to develop a balance display sheet. The program is for anyone interested in how business works and is essential for any prospective entrepreneur, so much so that the QLUB editor has just run off with it to ponder the mounting numbers of zeros on his bank balance. The program is available from QL stockists or you may order direct from Sinclair by completing the form on the back page of this issue.

After all that high finance, you may well be in the mood to blast a few on-screen asteroids.
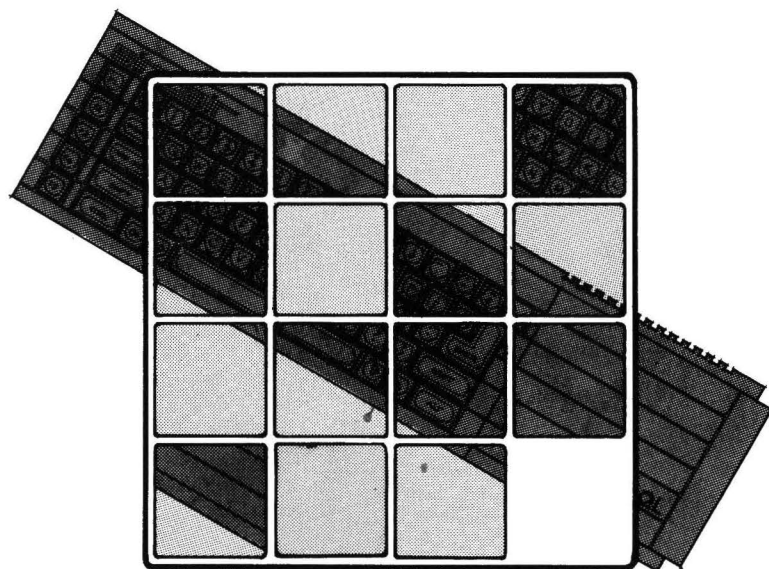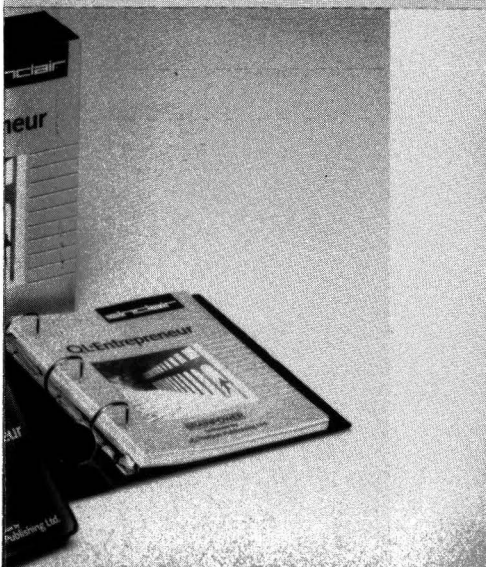
With a copy of the QL Meteor Storm, you will be in a position to do that.

This high-speed implementation of the arcade classic features multi-player, multi-level gaming with high score tables, joystick control and the meanest-looking crop of space junk I have seen since Halley's Comet last visited this planet – not that I was around then.

u blast a meteor, preaks into a ll● pieces, any could do you l injury'

To refresh the memories of those who have not yet had the pleasure of playing this genre of game, I should explain that it pits you, as the captain of a small but agile space cruiser, against the vagaries and whims of an ever-increasing storm of meteors – and anti-social enemy spaceships keen to assist the meteors in your destruction. You can avoid destruction but it is not an easy task.

The moment you blast a meteor, it breaks up instantly into a number of smaller pieces, any one of which could do your ship a terminal injury and must be destroyed before it does so. While you are busy fending off this shrapnel, the aforementioned enemy ship is apt to fly past and lob missiles at you. The £12.95 program will be available in the near future from QL stockists and direct from Sinclair.
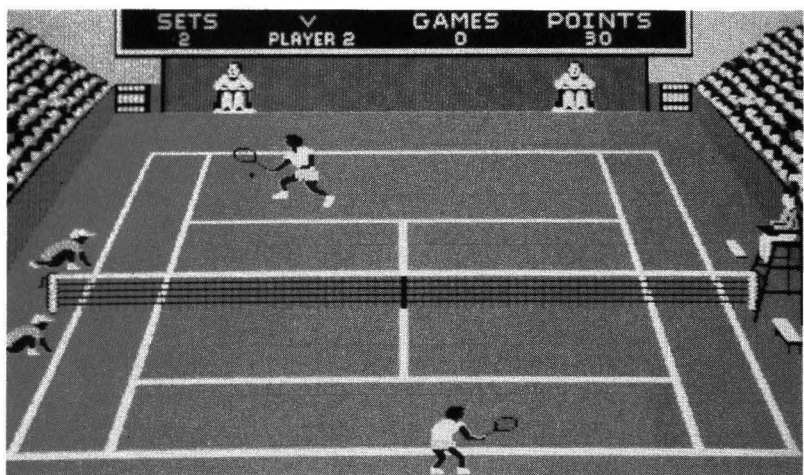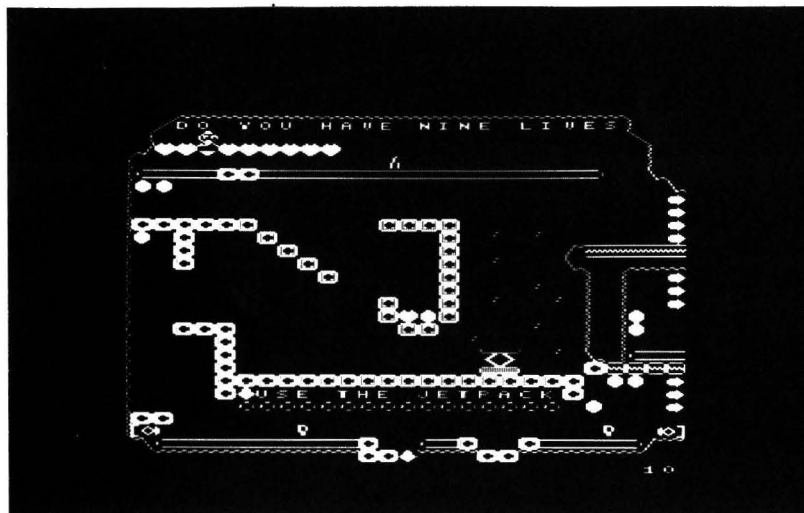
The game's the thing

Everyone knows that QL users are a little more serious and responsible than the mainstream of micro users – don't we? – but that does not mean we cannot appreciate a good game when we see one. Among the better games software titles available for the QL are:

● QL Meteor Storm: The new zap-'em arcade game profiled in the article opposite should make a welcome addition to any game-player's arsenal.

● QL Reversi: A £12.95 strategy game based on the classic board game, (also known as Othello), which offers joystick or keyboard control and features several skill levels. The program will be available in the near future direct from Sinclair and many QL stockists.

● QL Cavern: The £12.95 arcade game which became a QL favourite within weeks of its release and is still the best of its type.

● QL Chess: A championship-level implementation of computer chess featuring stunning three-dimensional graphics, a host of commands and a variety of skill levels. This £19.95 winner of the World Microcom-

puter Chess Championship has received rave reviews.

● Match Point: A £14.95 tennis simulation from Psion, the authors of QL Chess and the bundled QL applications software. Match Point includes fast action graphics, full player control, joystick or keyboard control, user-definable keys, single and twin player options and uses official lawn tennis scoring and rules. Please contact Psion Ltd, Psion House, Harcourt St, London W1H 1DT with enquiries or orders.

● COMING SOON TO A QL NEAR YOU: An amazing text adventure. It will sell for £19.95 and feature you as the star of a fantastic story in which the characters all have independent ideas about how to behave and attempt to induce you to perform tasks for them. It offers a flexible command language and employs the concept of containers – objects having weight, things being inside things, things being tied to other things. The game features an extensive vocabulary and will be a real challenge for adventurers. The program will be available in the near future.

Qorporate QLose-up: Triptych takes off

If you have a completely new idea, you have one major problem in marketing it – how do you convince people that they need it?

For Triptych Publishing, that proved to be no difficulty at all; when it launched earlier versions of its Brainpower range of tutorial/applications packages for a variety of micros last year, the press did all the explaining.

The warm welcome from press reviewers was followed by a triumph in this year's British Micro Computing Awards. The Brainpower series won Triptych a finalist placing in three categories, more than any other software house, and the Personal Computer World Home Software Award went to a Brainpower title, Entrepreneur. Presenting the award, Sir Alastair Burnet described Entrepreneur as "the product which brought business decisions to home computing".

A generous comment, but what is it that makes the Brainpower range so successful? "We wanted to produce really useful applications programs that would, for example, help people solve practical business or personal finance problems," says Triptych managing director David Juster.

The three titles launched by Sinclair for the QL in April give an indication of Brainpower's practical intent. QL Entrepreneur is a complete small business start-up kit, QL Project Planner teaches and applies the principles of critical path analysis, and QL Decision Maker provides a powerful tool for resolving complex decision-making problems.

What the titles do not tell you is that these programs are enjoyable to use. The screen displays have been carefully designed to give colourful graphic presentations of key points and concepts. For your money, you get the best of two worlds and more: one reviewer confessed that he had derived considerable entertainment from using QL Entrepreneur as a simulation game building business plans for those 'cannot-fail' ideas we all have and seeing whether they'd work. All the excitement of business, with none of the risk.

Juster's one regret about the Brainpower series is that the products were not available when Triptych went into business. He and the company's other two co-founders met at the London Business School on the Sloan Fellowship scheme, a prestigious one-year crash course for young executives of exceptional promise. All three were in their early 30s but from widely differing backgrounds.

"I had become convinced that computers were a good thing,' says Juster, "so I bought one. Then I was not sure what to do with it.

Tritych's three directors and co-founders L-R: Duncan Baird, David Juster and Stuart Armstrong

So I had to identify other computer buffs on the course and pick their brains." Juster was an Army officer. The other buffs he found were Stuart Armstrong, an Australian civil engineer and now Triptych technical director, and Duncan Baird, a publishing distribution expert.

Triptych, the choice of company name, was apposite. They brought three different points of view to bear on a single theme and the result has been a picture of success.

In the summer term of 1983 they sought finance, armed with a 100-page business plan which would have had most bank managers handing over the keys to the vault on a velvet cushion. Soon afterwards they were in business, with a team of programmers hard at work for a long time. It was not until September, 1984 that Triptych was ready to unveil its first six Brainpower titles.

Sales projections were exceeded. Amsoft commissioned Triptych to provide Brainpower conversions for the Amstrad Micro; CBS sought and agreed a European distribution deal; Marks & Spencer commissioned Triptych to program its first excursion into micro software, which sold 200 copies at the Marble Arch branch before lunch on the day it was launched; Collins, Britain's biggest independent book publisher, launched its new software

imprint, Collins Soft by buying the U.K. rights to the first six Brainpower titles for a range of low-cost home micros.

Now Sinclair has provided its endorsement by commissioning QL versions of three Brainpower titles and the additional power of the QL has given Triptych the opportunity to develop greatly-enhanced approaches to its original ideas. On the QL, the Brainpower series is even more powerful.

The QL version cost £39.95 and gives you a good deal of code for your money. Despite the compression Triptych programmers have achieved, the packages run to three Microdrive cartridges per pack. That is on top of the extensive manual which is part of the kit. As one reviewer wrote of the range: "It would be better for me to write the review in a year's time, as they all lend themselves to in-depth study".

Clearly, the Brainpower philosophy is closely in line with the thinking of many of the people who chose QL as the machine which meets both their personal and business needs.

If that leaves Triptych with a problem now, it is that it has given itself a difficult act to follow, but it is not too worried. "Suffice it to say," says Juster, "that we know better than anyone else what we are trying to improve on."

The Psion problem page

Problem: How do I make partial recovery of a corrupted database file?

Answer: First, it is imperative that you develop the habit of making frequent back-ups when updating/modifying your database files.

It is also advisable to have an EXPORTed back-up of your file because it is easier to inspect the file and isolate the bad records. Try to make sure that you are never in the position of losing more than two hours' work.

Provided that your Microdrive cartridge has not been too badly damaged, you should be able to use LOOK to open the database file for reading. The strategy is to find the first and last corrupted record and then to copy the uncorrupted records into a database file on to a second cartridge. Follow this procedure:

Boot-up QL Archive and place the cartrige containing the corrupt database file in MDV2_. Type in the following commands to locate the first corrupted record:

LOOK "mdv2_bad file":display:all: sprint:print recnum():endall

This procedure will display all uncorrupted records together with their position in the database. When trying to print a corrupted record, QL Archive may crash or it may report an error – i.e., incomplete file transfer – or something unusual for you to realise that you have reached a corrupted record.

Note the last record number reported by the short program above. If QL Archive crashed, then boot it up and open the file for reading again using LOOK. Go to the last record using LAST. Then type-in the following commands for locating the other extreme of the corrupted records:

let n=1: while n: print recnum(): back: endwhile

Once again, you will see something unusual or perhaps QL Archive will crash. Make a note of the last uncorrupted record. If QL Archive crashed, then boot

It looks like QL Archive, but it's not. Above is Psion's X change Archive for the IBM PC – which can use Archive programs written with the QL.

it up again. Invoke the program editor (EDIT) and type-in the following procedure:

PROC RETRIEVE:

> **LOOK "mdv2_bad file"logical"bf"**
> **CREATE "mdv1_copy"logical"c"**

> (create a database with the same structure)
> (type in all the field names. I am going to have two fields)

> a$
> b

> **ENDCREATE**

> **use "bf": let upto=20 (this number is the record preceding)**
> **let n=1 (the first corrupted record (SEE ABOVE))**
>   **while n<=upto**
>   **let c.a$=bc.a$: let c.b=bc.b**
>   **append "c": let n=n+1: next**

> **endwhile**

The above copies all records up to the first corrupted one position 35. That

number is the record following the last corrupted record. Substitute with the one which applies to you.

While not eof (bc)
let c.a$=bc.a$: letc.b=bc.b
append "c"
next
endwhile

This second WHILE loop copies the second batch of uncorrupted records.

>   **close**
>   **close**

>   endproc

Now remove the QL Archive cartridge from mdv1_ and insert another formatted blank cartridge to which you will copy the uncorrupted records and invoke the procedure RETRIEVE.

That will then retrieve most of your records. You will, however, have to re-create the lost records somehow, perhaps by referring to a back-up file. Mark the cartridge in MDV1_ as your working cartridge; re-insert QL Archive into MDV1_ and reformat the old cartridge MDV2_ for re-use.

Programmer's forum

Although only eight solid colours are available on the QL screen, the use of stipples provides a way to blend them so that the apparent number of shades is much greater.

Every single pixel, picture element, better understood as "dot" on the screen can have any one of the eight basic colours, so by colouring adjacent pixels with different shades, the composite when viewed from a distance appears to be in an entirely new colour. That is the principle behind stippling.

A stipple colour is specified by giving the QL three numbers. The first two give the two colours used to colour the dots. The third (a number from 0 to 3) gives the stipple pattern which dictates how the dots are arranged.

PAPER 4,2,0
CLS

sets the paper colour to a stipple of green – colour 4 – and red – colour 2 – using stipple pattern 0. The stipple pattern refers to the position of pixels in the first colour relative to those in the second. If you take four pixels arranged as shown below, you can use the stipple number to determine which of the four pixels are shown in the first colour and which are shown in the second:

1	2
3	4

Stipple pattern 0 corresponds to pixels 1, 3 and 4 being in the main colour and pixel 2 being in the second colour.

Pattern 1 has pixels 1 and 2 in the main colour and pixels 3 and 4 in the second colour, pattern 2 has 1 and 3 in the main colour and 2 and 4 in the second colour, and pattern 3 has pixels 1 and 4 in the main colour with pixels 2 and 3 in the second.

If you consider the four-pixel pattern as being spread across the entire window, you can imagine that each pattern has a distinctive appearance. Pattern 3 appears as a very finely-divided chessboard, while pattern 1 appears as a pattern of horizontal lines.

Try a few combinations now but remember that in high-resolution mode, mode 4, only four colours are available – black, red, green and white – so the patterns will not be coloured so vividly.

Although typing in all three parameters to PAPER, INK, STRIP and so on to obtain the required stipple is probably the easiest way of getting the stipple colour you want, it is fairly long-winded. If instead you follow a particular formula, it is possible to specify the stipple colour as one number. For example,

PAPER 18
CLS

> ### 'Although stipples are fairly awkward to get used to, the effort is worthwhile'

---

produces just the same effect as

PAPER 2,0,0
CLS

To determine why, you need to consider each element of the colour as a binary number. Take the main colour; in your case, this is colour 2, which is red. If you represent 2 as a three-digit binary number, you get

010

You must then take the second colour, which is 0, or black. 0 as a three-digit binary number is

000

You must then XOR the two colours together. XOR stands for 'exclusive-OR', which produces a binary '1' if the two things being XORed together are not the same, and a binary '0' otherwise. In other words, if you XOR 010 with 000, you get:

010	
000	XOR

010	

The result happens to be the same as the first number as zero has been added. You must then treat the main colour as the lowest three binary digits of an eight-binary-digit number and the result of our XOR as the next three bits:

nn010010

The final two bits, 'nn' above, are filled with the stipple pattern. Stipple pattern 0 is 00, pattern 1 is 01, pattern 2 is 10 and pattern 3 is 11. You are using pattern 0, so your final number is

00010010

If you convert this back into decimal, you obtain

18

which is the number you used to achieve the same effect.

A major headache with the use of stipples is working out the ink colour which, when super-imposed on the stipple, will produce legible writing.

A particularly suitable colour for the ink with our paper colour of 18 is white, which is colour 7. So, if you opened a window,

100 OPEN#3,scr_400x200a56x0

110 PAPER#3,18:INK#3,7:CLS#3

you could then print things to channel 3 in the normal way, the difference being that each printed item does not appear as boring old green ink on black paper but as white ink on a red/black mixture.

Although stipples are fairly awkward to get used to, the effort is worthwhile. By choosing the correct stipple patterns and colour mixtures, all kinds of colour effects can be achieved. The important thing to remember is that a stipple pattern will almost certainly look very different in the two screen modes.
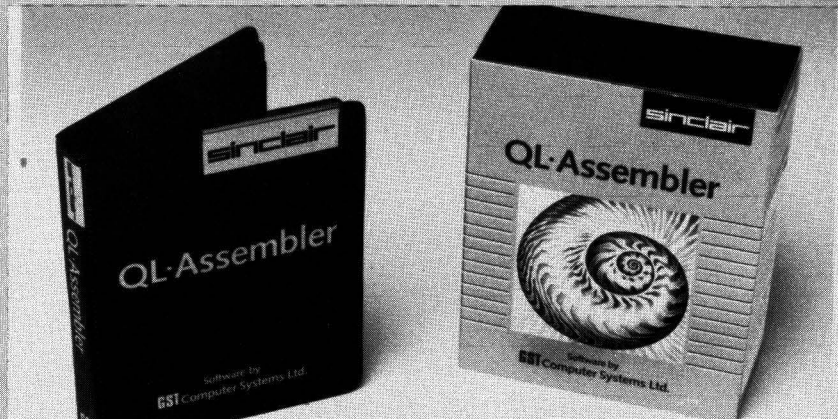
Using Sinclair's QL Assembler, you can move beyond Super BASIC into defining even more poweful programs

Machine code

For people used to BASIC, Super or otherwise, the speed of machine code in some applications is difficult to grasp. That is particularly true when moving around large amounts of data, something at which machine code excels.

The Super BASIC loading program is listed immediately below. At left is the machine code listing.

In this issue, we look at the possibilities for manipulating the special 32K portion of memory which starts at $20000 – the screen RAM. Shifting the screen memory around has the added advantages that the consequences are displayed graphically and are relatively unlikely to crash the machine but, of course, 32K of data requires speed.

The program FLIP allows you to save a screen in RAM and recall at will. It could prove useful for help screens, games and making copies of graphics screens under development. The principles are the same as those used for pull-down menus and the like, except they involve less of the screen, so they might also provide some ideas for more advanced readers.

Three keywords are added to Super-BASIC, SAVE_SCR, SHOW_SCR and FLIP. SAVE_SCR will save into its own area of RAM, the current screen display, replacing any previously SAVEd_SCR.

SHOW_SCR will over-write the current screen display with the SAVEd_SCR; FLIP will swap the screen display with the SAVEd_SCR, so another FLIP will restore the status quo. Thus a screen which took some time to draw could be drawn once, saved using SAVE_SCR, and then FLIP-ped on to the screen at any later time in about one second, without destroying the current screen display, which is restored with a further FLIP. SHOW_SCR destroys the current screen but is faster than FLIP.

```
100 REMark Basic loader for FLIP
110 checksum=0
120 base=RESPR(512)
130 num_bytes=140
140 RESTORE 1000
150 FOR offset=0 TO num_bytes-1
160 READ byte
170 checksum=checksum+byte
180 POKE base+offset,byte
190 END FOR offset
200 IF checksum <> 10779:PRINT "Wrong data!":STOP
210 CALL base
1000 DATA 34,60,0,0,128,0,116,255,112,24
1010 DATA 78,65,74,128,102,18,71,250,0,118
1020 DATA 38,136,67,250,0,12,52,120,1,16
1030 DATA 78,146,66,128,78,117,0,3,0,38
1040 DATA 8,83,65,86,69,95,83,67,82,0
1050 DATA 0,38,8,83,72,79,87,95,83,67
1060 DATA 82,0,0,38,4,70,76,73,80,0
1070 DATA 0,0,0,0,0,0,97,38,34,218
1080 DATA 81,201,255,252,66,128,78,117,97,26
1090 DATA 36,217,81,201,255,252,66,128,78,117
1100 DATA 97,14,38,18,36,209,34,195,81,201
1110 DATA 255,248,66,128,78,117,71,250,0,18
1120 DATA 34,83,36,124,0,2,0,0,34,60
1130 DATA 0,0,31,255,78,117,0,0,0,0
```

The program demonstrates several points; the linking-in of keywords to Super-BASIC, the allocation of memory in the common heap area, the use of subroutines and some of the versatile addressing modes available in 68000 assembler.

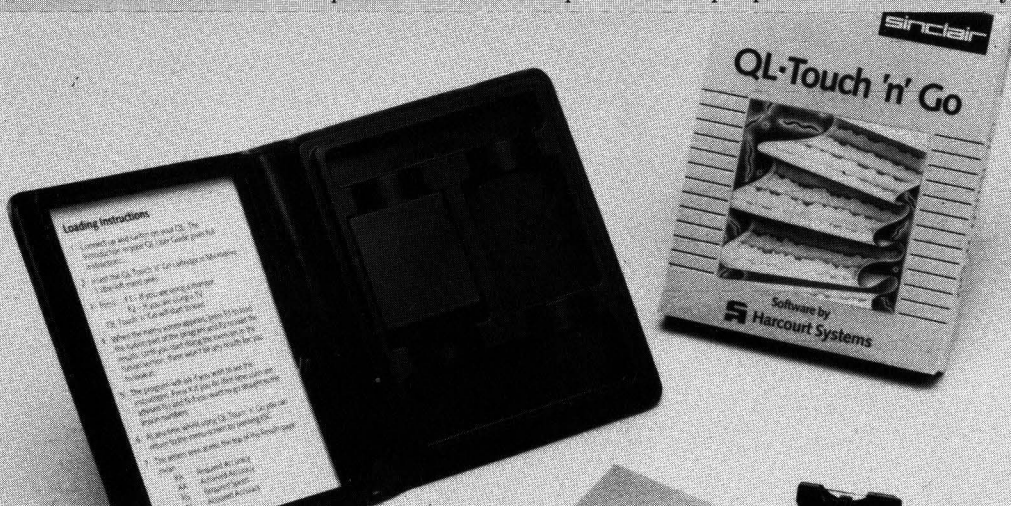The first requirement is to allocate some memory for the RAM screen, using the Qdos trap MT.ALCHP, which provides space in the common heap area. The trap returns the address of the base of the heap space in register A0 and the program saves it in a data storage area, HEAP_START.

The next job is to link in the extra keywords using the vectored utility BP.INIT. That causes the extra keywords to be recognised by SuperBASIC and tells the interpreter where to find the routine to be performed if one of the keywords is used.

and more....

Listing 2

Finally, the routines are described. As all of them require register A1 to point to the base address of the heap, A2 to the first screen location, and D1 prepared to act as a loop counter, the setting up is performed by a subroutine.

The instruction at the beginning of each routine is therefore BSR.S, or branch to subroutine. The instruction pushes the address of the next instruction on to the stack and then executes the subroutine.

When the subroutine ends with RTS or return from subroutine, the Program Counter assumes the value of the top of stack, so program execution continues with the instruction after the BSR. The '.S' appended to the BSR can be used when the subroutine is fewer than 128 bytes away and shortens the opcode. The SAVE_SCR routine then moves to the label FILL_HEAP, which uses the very convenient post-increment mode of addressing.

The instruction moves the contents of the location pointed to by A2, the first long word of the screen memory, to the location pointed to by A1, the first address in the heap. It then adds the appropriate amount to A1 and A2, 4 in this case, so that they point to the next long word location.

The next instruction, DBF, means decrement and branch until false; some assemblers use DBRA. Remembering that we have set D1 to the number of long words in the screen-1 the instruction will cause FILL_HEAP to be executed $2000 times, transferring the whole screen – it takes only a second or so.

SHOW_SCR does exactly the same as SAVE_SCR but in reverse – it transfers the contents of the heap to the screen.

FLIP is slightly more complicated because we wish to swap the contents of heap and screen. There are various ways of doing this; in this case register D3 is used as a buffer so that a screen memory location is vacated before the heap value is moved into it. D3 can then be moved to the heap address.

To use the program you have a choice – either type in the SuperBASIC listing, save it and run it – or if you have an assembler, you could enter the source code and assemble it. Please note that some assemblers will require slightly different notation. If you choose the BASIC you can, of course, save the code produced after running the loader with SBYTES mdv1_flip_scode, base,140.

```
* Program to add extra Basic keywords for screen control
* Keywords are SAVE_SCR, SHOW_SCR, FLIP
* SAVE_SCR saves to RAM the current screen,replacing any previously saved screen
* SHOW_SCR displays the screen in RAM, destroying the current screen
* FLIP displays the screen in RAM but saves the current screen in its place,
* whence it can be restored by another FLIP

* QDOS codes
*
MT.ALCHP     EQU     $18          Allocates common heap space
BP.INIT      EQU     $110         Vectored utility to link into Basic
*
* Program constants
*
SCR_START    EQU     $20000       Base address of screen memory
LONG_WORDS   EQU     $2000        Number of long words in screen
SCR_BYTES    EQU     $8000        Number of Bytes in screen
ME           EQU     -1           Code to signify this job
*
* First allocate enough heap space for whole screen
*
             MOVE.L  #SCR_BYTES,D1  Number of bytes required
             MOVEQ   #ME,D2         for this job
             MOVEQ   #MT.ALCHP,D0
             TRAP    #1             Do it
             TST.L   D0             Any errors?(like out of memory)
             BNE.S   EXIT           Yes, so forget about it
             LEA     HEAP_START,A3  Otherwise save base address of heap
             MOVE.L  A0,(A3)        in A3 and HEAP_START
*
* Link in the extra Basic keywords
*
             LEA     PROC_DEF,A1    Point to table in standard QDOS format
             MOVE.W  BP.INIT,A2     Point to vectored utility
             JSR     (A2)           and go to it
             CLR.L   D0             Make a good return
EXIT         RTS                    to Superbasic
*
* Set up the table as required by Qdos for the extra keywords
*
PROC_DEF     DC.W    3              Number of Procedures
             DC.W    SAVE_SCR-*     Pointer to first
             DC.B    8,'SAVE_SCR',0 and its name
             DC.W    SHOW_SCR-*     Pointer to second
             DC.B    8,'SHOW_SCR',0 and name
             DC.W    FLIP-*         Pointer to third
             DC.B    4,'FLIP',0     and name
             DC.W    0              End of procedures
             DC.W    0              No functions
             DC.W    0              End of table
*
* Define the action to be taken on calling keyword from Superbasic
*



SAVE_SCR     BSR.S   SET_UP         See SET_UP
FILL_HEAP    MOVE.L  (A2)+,(A1)+    Move a long word from screen to heap
             DBF     D1,FILL_HEAP   and do it again for the whole screen
             CLR.L   D0             Make good
             RTS                    return to Basic
*
SHOW_SCR     BSR.S   SET_UP
FILL_SCR     MOVE.L  (A1)+,(A2)+    Move a long word from heap to screen
             DBF     D1,FILL_SCR    and carry on until finished
             CLR.L   D0
             RTS
*
FLIP         BSR.S   SET_UP
CHANGE       MOVE.L  (A2),D3        Move a long word from screen to D3
             MOVE.L  (A1),(A2)+     and replace it with the first word on heap
             MOVE.L  D3,(A1)+       then move the original screen word to heap
             DBF     D1,CHANGE      and again until complete
             CLR.L   D0
             RTS
*
*
SET_UP       LEA     HEAP_START,A3  Set A1 to base
             MOVEA.L (A3),A1        address of heap
             MOVEA.L #SCR_START,A2  Set A2 to base address of screen
             MOVE.L  #LONG_WORDS-1,D1 Set up D1 as a loop counter
             RTS                    and back to caller
*
HEAP_START   DS.W    2              Reserve space to store base address of heap
*
END
```

Quantum Leaps: The QL Case Study

Probably the most dramatic and useful application any computer can have is for the medical profession, where the need to find very specific pieces of information about patients quickly can literally be a matter of life and death.

In its small way, the QL has become an important method of storing such patient information at the Children's Hospital in Birmingham. Using the powerful QL Archive program included with the QL, the hospital has developed its own database to store and retrieve patient reports.

The hospital uses a standard QL running QL Archive, hooked to a monochrome monitor and a Brother M1009 printer. Patient records and diagnoses are stored on the QL by three secretaries putting information on to the system.

The QL is used in the hospital HistoPathology department and records, among other data, information on specimens removed from patients during operations. Dr Alan Brown-Hill explained that the field names for the database include such vital information as the patient's name, age, sex, hospital registration number, the laboratory number of the specimen and an abbreviated diagnostic summary using pre-defined codes. Three extra fields have been added to indicate whether there is any existing photography of the parts removed, microphotography of slides from the microscope or electron microscopy data.

The department has already stored its 1984 data, some 1,100 records, on a single Microdrive cartridge and is now planning to work through all such records for the last 25 years to compile a complete patient database. It is hoped that during the process some high-capacity disk drives can be bought, although the Microdrives have presented no real storage problems so far.

Operators make two back-ups of all data entered into the database to ensure that precious information is not lost. Completed patient reports are entered into the system once or twice a week and each update takes only half an hour to an hour. The reports are also sorted and printed-out each week according to various criteria.

Although the hospital says the QL has not really reduced the work required to keep those patient records, it has made information much more readily available than the paper-based card index system it had been using previously.

SPECIAL OFFER OFFICE

The Special Offer Office keeps track of all deals and discounts for QLUB members, which includes anybody who is sent this newsletter. Listed below are the deals offered to members:

★ Metacomco is offering QLUB members price reductions on its development and programming software. The company will give you a 20 percent discount on selected software. For more details, write to:

Metacomco Offer,
Special Offer Office,
26 Portland Square,
Bristol BS2 8RZ.

★ GST Computer Systems is offering its acclaimed 68K/OS operating system for the QL at a 20 percent discount. For details, write to GST Computer Systems, 8 Green Street, Willingham, Cambridge CB4 5JA or telephone Jane Pateman on 0954-81991. Have your membership number and address to hand.

★ Westway software is offering its new machine-code arcade game, EVA, at a discount to QLUB members. The game sells for £10.95 but QLUB members can buy it for £1 off that price. Send your orders to QLUB Special Offer, Westway, 24 Preston Road, Lytham, Lancashire.

★ DRK Products Ltd is offering its Microdrive-tidying racks to QLUB members at a 20 percent discount off the normal £4.95 price. This simple rack can be affixed to your QL, just above the keyboard. To order, send your £3.95 (per rack) to DRK Products Ltd, Bar One, Pipers Lane, Caddington Common, Near Markyate, Herts AL3 8QF or call on 0582-840402.

★ Duckworth Publishers offer a 20 percent discount on Adam Denning's new book, Advanced QL Machine Code. The retail price is £8.95 but QLUB members can obtain the book at £7.16. Contact Duckworth Publishers, Sales Department, The Old Piano Factory, 43 Gloucester Crescent, London NW1 or telephone 01-485-3484.

★ A 20 percent discount is available on selected items of QL software sold by Sinclair Research through QLUB.
QL Technical Guide, QLUB price £11.95.
QL Monitor, QLUB price £19.95.
QL Assembler, QLUB price £31.95.
QL Toolkit, QLUB price £19.95.

Send your order, using the form on page 12, to Sinclair Research, Stanhope Road, Camberley, Surrey GU15 3PS.

★ A discount is available for a year's subscription to EMAP's *QL User* magazine. A year's subscription including delivery normally would cost £15. If you subscribe through QLUB, the magazine will be delivered for an all-in (postage included) price of £11.50. To receive your 12 issues, send a cheque or money order for £11.50 to PRQL, Subscription Department, QL User, Priory Court, 30/32 Farringdon Lane, London EC1.

QL Quarks

Ah, the difficulties of writing cerebral humour about the QL. This writer's imagination is stretched to the limit and I am now pleading for readers' contributions. Since the response to our last limerick competition was overwhelming, the QLUB editor feels that we do not want to be accused of stemming our readers' creativity. The fact that we may be on to a good thing may also have a slight bearing on the situation.

We are looking for the best completed answer to the following limerick:

A QL on a day trip to London ....

There is even remuneration in the offing; the three best completions of this limerick will receive a free copy of QL Cavern. Send your priceless prose to the QLUB Editor and watch this space to see if you are Poet Laureate material.

QL demo delights

Imagine the scene; it is a dark and stormy night, you wander down the high street in search of shelter and see a QL retailer, who invites you in. Protected from the cold, you sit in front of a demonstration QL to exercise your cold and numb fingers. Seeing there are no Microdrive cartridges plugged in, you try to "break" the demo program.

Pressing various keys only makes the demo program run faster. Nothing seems to stop the mysterious ghost in the machine.

Fear not, it is all part of a new campaign to show off QL software. Dealers up and down the country have been issued with special demo QL ROMs to put inside their display machines which cause the machines to run demonstrations of QL software continually. The ROMs are hidden so that they cannot be removed or tampered with, unless there's a real ghost in the machine.

QLUB product order form

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